

## **AIR-PRUNING TRAY/CONTAINER MATRIX TRANSFER AND TRANSPLANTING SYSTEMS AND METHODS**

### **ABSTRACT**

The present invention entails a plant/seedling/plug growing tray/container plants and their matrix transfer and transplanting systems and methods which includes trays/containers with a plurality of individual plant/seedling/plug cells/pots and manual, mechanical, pneumatic, hydraulic, and/or electrical systems that are operative to induce plants to a planting area or receptacle such as flats, pots, containers, or the field. The trays/containers also serve as a plant supply cartridges for air-pruned plants/seedlings/plugs so that they can be manually, semi-automatically or automatically removed from the open tray cell top or bottom for matrix transfer and transplanting, using manual, mechanical, pneumatic, hydraulic and/or electrical means. In the embodiment disclosed herein a self-contained system controls all operations including up-and-down motion of upper and lower indexing tables, accurate indexing and matching of trays/containers and flats/pots, dibbling of growth media, pushing or pulling of plants/seedlings/plugs from tray/container cells/pots, to achieve the plant transfer and transplanting. The system has the capability of transferring and transplanting a set of multiple plants/seedlings/plugs simultaneously at a time in a matrix formation, and then to shift a supply trays/containers to a subsequent position and then to transfer and transplant next set of multiple plants/seedling/plugs. In addition, the matrix plant transferring and transplanting methods of the present invention is specifically designed to provide several matrix patterns from a supply tray and adapted such that it can be utilized both in the dry or paddy field, and greenhouses.